CLAIMS

1. Method for determining the three-dimensional surface of an object comprising the phases of:

defining (1) the coordinates of a plurality of points of said object;

defining (2) a three-dimensional matrix of cells that contains said object to which a value can be associated;

determining (3) the distance between each centre of said cells of said three-dimensional matrix of cells and the closest point of said plurality of points of said object;

setting (4) the value of several cells of said three-dimensional matrix of cells at a first preset value;

determining (7) the value that each cell of said three-dimensional matrix of cells assumes, with the exception of said several cells, by means of the following formula

$$F(\bar{x}_i, t+1) = \frac{F(\bar{x}_i, t) \cdot v_i + w \cdot \sum_j F(\bar{x}_j, t) \cdot v_j}{v_i + w \cdot \sum_j v_j}$$

where

$\bar{x}_i$ represents the coordinates of the centre of the i_th cell,

$F(\bar{x}_i, t)$ represents the value of the i_th cell at time t,

v_i represents said distance,

w represents a second preset value, and

j indicates a neighbourhood of cells of the i_th cell;

determining (9) the sum in module of the variations of the value of each cell between the time t and the time $t+1$;

repeating (10) said phase of determining the value that each cell of said three-dimensional matrix of cells assumes if said sum is greater than a third preset value.

2. Method in accordance with claim 1 characterised in that said cell of said three-dimensional matrix is of cubical shape.

3. Method in accordance with claim 1 characterised in that said cell of said three-dimensional matrix of cells is of parallelepiped shape.

4. Method in accordance with claim 1 characterised in that said distance is determined by means of the following formula

$|\bar{x}_i - \bar{p}|^{\alpha}$

where

$\bar{x}_i$ represents the coordinates of the centre of the i_th cell,

$\bar{p}$ represents the coordinates of a point, of said plurality of points of said object, at a shorter distance from the centre of the i_th cell,

α represents a fourth preset value.

5. Method in accordance with claim 4 characterised in that said fourth preset value is between 1.5 and 2.5 and preferably equal to 2.

6. Method in accordance with claim 1 characterised in that the phase of setting the value of several cells of said three-dimensional matrix of cells at a first preset value comprises the phase of setting at value +1 all the values of the cells placed at the edges of said three-dimensional matrix of cells and setting at value -1 the value of the remaining cells.

7. Method in accordance with claim 1 characterised in that said second preset value is between 0.1 and 0.9.

8. Method in accordance with claim 1 characterised in that the index j represents a neighbourhood of cells in face or corner or vertex contact with the i_th cell.

9. Method in accordance with claim 1 characterised in that it comprises the phase of filtering said value that each cell of said three-dimensional matrix of cells assumes multiplying it by a fifth preset value.

10. Method in accordance with claim 1 characterised in that it comprises the phase of multiplying cyclically along the three spatial axes said distance by a multiplicative coefficient.

11. Method in accordance with claim 1 characterised in that the phase of defining the coordinates of a plurality of points of said object comprises

the phase of subdividing said object in at least two distinct parts; carrying out all the remaining phases of claim 1 for each of said at least two distinct parts; combining said value that each cell of said three-dimensional matrix of cells of said at least two distinct parts assumes choosing the lower value in the case of overlapping of cells.

12. Computer program comprising a program code that carries out all the phases of any previous claim when said program is carried out on said computer.

13. Computer program memorised on a support that can be used by said computer to control the execution of all the phases of any previous claim.